REMARKS

Claims 3-5, 8, 11-13, 15, 17-22, and 24-30 are active. Claims 1, 2, 6, 7, 9, 10, 14, 16, and 23 are canceled. Claims 28-30 are new. The specification is objected to under 35 USC 132 and the disclosure is objected to. Claim 12 is objected to for grammar and under 35 USC 112, 2nd ¶. Claims 2 (canceled) -3, 11, 14 (canceled) -15, 23 (canceled), 25 and 26 are rejected under 35 USC112, first ¶. Claims 4, 10, 12 and 13 are rejected under 35 USC103 as being unpatentable over Friend in view of Sakai and Gudesen. Claims 5 and 8 are rejected under 35 USC103 as being unpatentable over Friend. Claims 6, 7 and 9 are rejected under 35 USC103 as being unpatentable over Friend in view of Sakai. Claims 2 (canceled), 3, 14 (canceled) and 15 are rejected under 35 USC103 as being unpatentable over Friend in view of Sakai, Gudsen and Schmidt. Claim 11 is rejected under 35 USC103 as being unpatentable over Friend in view of Sakai, Gudsen and Kelly. Claims 17-22 and 24 are rejected under 35 USC 103 as being unpatentable over Ezawa in view of Gudesen and Schmidt. Claim 27 is rejected under 35 USC 103 as being unpatentable over Ezawa in view of Gudesen and Schmidt.

Applicants thank the Examiner for his detailed and constructive comments.

The Specification

The specification is amended in view of the objections based on formal matters.

The term polypropylene is deleted as requested to advance the prosecution of this application, not because applicants agree that this term is new matter for reasons given in applicants' prior responses. The action states that polypropylene is not inherent in PP. This is not true. See the Wikipedia definition of polypropylene which uses the

term "PP". Since the Action states PP is common to other materials, all or any of such materials may be expressly included without being new matter.

The prior amendment stating "in the alternative, the layer 4 as shown in the Figures 5-7 (or layers 4 and 5)" and "or its equivalent" added to para. [0022] is objected to as new matter. Para. [0022] is amended to delete the objected to terms. This para. Is amended to delete the discussion of Figs. 1-7 in the interest of clarity as this paragraph is intended to discuss the embodiment of Fig. 8.

Amendment is made to correct the typographical error in the specification.

The claim objections and rejections under 35 USC 112

Claims 11 and 12

These claims are amended as requested.

Claims 2-3 and 13-15

Claims 2 and 14 are canceled. The remaining claims are amended to meet the various objections. The Action states that Figs. 1-7 do not have a disruption element as a separate item, but instead the disruption element is the through plating. This conclusion is not entirely accurate. The disruption element is the through plating because the through plating is made of a certain material, for example carbon black, that prevents wetting of the through plating and thus forms a disruption element. The disruption element is more than merely the through plating per se. It is the combination of its material and its physical formed shape since it is the material composition in that shape that prevents wetting of the through plating, and not the through plating being physically present as such. The disruption element would still be present even if the through plating were instead formed as a thin layer of such a material. See para.

[0015]. The claims are amended to meet this objection to advance the prosecution of this application.

Claim 13

This claim is amended to meet the various objections to others of the claims based on formal matters. The objection is that the through plating of Figs. 1-7 is the disruption element whereas in Fig. 8, the disruption element is something else. Thus claim 13 is amended. However, see the discussion above regarding this aspect of the objections. Amended claim 13 calls for:

> a disruption element comprising a truncated conical in cross section profile through plating that is solely truncated and located on a portion of the first layer over a given region of the first layer;

This term should meet the objections to certain of the dependent claims by referring to the embodiment of Figs. 1-7, as requested by the Action. It is arguable that it is not the truncated profile of the through plating that forms the disruption element, but rather the material that it is formed of. See para. [0015] listing various materials forming the through plating disruption element .Thus the composition of the material forms the disruption element regardless its final shape. The shape that material takes is secondary. Thus the assertion that the embodiment of Figs. 107 is different than that of Fig. 8 is misplaced. The embodiment of Figs. 1-7 is consistent with the embodiment of Fig. 8 for this reason, and not different as asserted. In Fig. 8, as in Figs. 1-7, it is the composition of the material of disruption element 7 that forms it into a disruption element. In any case, claim 13 is amended to advance the prosecution of this application. The truncated profile through plating is a disruption element according to the specification as admitted by the Action and as claimed, albeit not because it is a

through plating per se, but because of its material composition.

Claim 13 no longer, via its objected to dependent claims, exhibits the structure calling for both disruption element and a truncated through plating in the manner objected to in the Action such as in claims 2(canceled for other reasons), 3, 14 (canceled for other reasons) and 15. The amendment made herein to the various claims is believed to address the objections to these claims, claims 2 and 14 being canceled on other grounds as being redundant in view of the amendment to claim 13. The objections to this claim based on formal matters is believed met and should be withdrawn.

Claim 12 and other claims

Amendment is made to others of the claims to meet the objections based on formal matters. In claim 12, the Action objects to the plurality of layers followed by the term "which layers." It is not clear in the Action as to the term "which layers" is being referred to, the plurality of layers or the plurality of layers excluding the lower layer. This objection is not sound. The claim is plain garden variety English. There is no basis for the so called ambiguity in claim 12 which is clear on its face and which called for, prior to amendment:

> forming a plurality of layers of different materials including a first lower layer, a majority of which layers are of predominantly organic material and which plurality of layers includes an insulating layer

The term "majority of which layers" plainly refers to the plurality of layers of which there is only one term "layers." The term "which layers" still refers to the plurality of layers. There is only one antecedent term "layers." The term "which" does not change that. There is no basis that the term "which layers" for some reason as asserted in the

Action excludes the first layer in a different plurality of layers and now is referring to some other layers other than the "plurality of layers." Plain English construction of the term "layers'" would not construe this term to mean different things in the middle of the clause. That construction is improper and wrong. The terms "which layers" and "which plurality of layers" both refer to the plurality of layers and to construe the claim otherwise is incorrect grammar. There is no basis in this claim to construe the term layers as excluding the first layer as asserted. However, the claim is amended to advance the prosecution of this application.

The Action states it is not clear how the "subsequent layers" relate to the "plurality of layers." The claim is amended to overcome this aspect, although applicants believe this objection is hypertechnical. The claim would be construed correctly by one of ordinary skill to mean as amended.

Claim 23 is canceled and the rejection of this claim is moot on this ground. Claims 26 and 26 are also amended to meet the objections based on formal matters. For the reasons given, the rejections and objections based on formal matters are believed met and this basis of the rejection should be withdrawn.

Amended claims 3-5, 8, 11-13, 15, 17-22, and 24-27 and new claims 28-30 are submitted for the Examiner's reconsideration.

The substantive rejection of the claims

Claims 4, 12 and 13 are rejected over Friend (WO'938) in view of Sakai and Gudesen. Friend WO '987 is cited, however, the first named inventor in this reference is not Friend, but Sirringhaus. Friend, Sakai and Gudesen are all foreign to these claims taken singly or in combination for the following reasons.

Claim 12

Claims 12 and 13 are independent claims, claim 12 being directed to a process for the production of an electronic component and claim 13 being directed to an electronic component. Claim 4 depends from claim 13 and thus would be allowable if claim 13 is shown to be allowable.

Claim 12, amended, is directed to forming a carbon black disruption element. None of the references disclose a carbon black disruption element, including Friend, Sakai and Gudesen.

This claim has full support in the specification. Para. [0021] of the specification states in the third sentence:

> "The disruption 7 can comprise both conductive and also insulation material."

Carbon black is conductive, see para. [0015]. The specification para. [0022] in referring to Fig. 8 further states in the second sentence:

> "A defined disruption element 7 has been applied to the lower conductor track 2."

In Fig. 8, the disruption element 7 is shown as a layer. Obviously this disruption element 7 layer is applied to the lower layer 2 as shown (The first layer of claim 12). The specification at para. [0015] states that in the embodiments of Figs. 1-7, the through plating may comprise carbon black among other materials. The Action concedes that the through plating is a disruption element. The specification states, para. [0024], that

> "The through-plating 3 [Figs. 2-7] is therefore produced in such a way that, upon application of the semiconductor and insulator layer, the lower conductor layer 2 in Fig. 1 is locally not wetted. "

Thus, a disruption element by definition in para. [0024] is one that

> "upon application of the semiconductor and insulator layer, the lower layer 2 in Fig. 1is not locally wetted. In other words, at the location of the vias [the void produced when subsequent layers, i.e., semiconductor and insulator layers, are applied to a disruption element due to non-wetting caused by the disruption element] holes are deliberately produced in the layers which are to be through-plated."

Also, as in para. [0027]:

> "It is also possible locally to apply for example a material . . . which has non-wetting properties which prevents wetting (comparable to the foregoing disruption)."

Thus it is plain it is the material composition that forms a disruption element and not a particular shape of a construct formed from such material, whether it be a through plating or any other structure, Figs. 1-7, or merely a layer, Fig. 8. Carbon black is such a non-wetting disruption material per para. [0015]. Carbon black is conductive and is used to produce the through plating in the disclosed embodiment and which carbon black can serve as the disclosed disruption element specified in para. [0021] and [0022], whether it be a through plating or merely a layer. It is further advantageous as a disruption element per se regardless of its shape as it prevents later applied organic functional materials such as a semiconductor and an insulator to not wet this material. The through plating made of carbon black, as shown in Fig. 3, forms a disruption element by way of the kind of material it is made of and not merely because of its structure as a through plating per se, which is secondary as a disruption element in the context as disclosed and claimed.

In Fig. 3, attention is made to the chamfered filets in layers 4 and 5 where they join the through plating 3. These filets are significant because they confirm that the

layers 4 and 5 were applied after the through plating 3 (made of the various materials of para. [0015]) was initially formed as shown in Fig. 2. Also the layers 4 and 5, although applied to the through plating 3 after it is formed, are not deposited on top of the through plating shown having a relatively ragged, rough top surface. This figure is consistent with the specification and Fig. 8 in that the through plating 3 is not wetted by these later applied layers. This non-wetting occurs because of the material the through plating is carbon black, for example, and not because it is a through plating per se. Otherwise the layers 4 and 5 would also have been deposited on top of the through plating 3.

The Fig. 3 structure plainly shows to one of ordinary skill that carbon black per para. [0015] is a non-wetting disruptive element substance in respect of subsequently applied semiconductor or insulator functional layers in the context of the Fig. 8 description. Thus carbon black may be used as the disruptive element 7 in the context of Fig. 8 regardless of whether it is also used to form a through plating in the context of Figs. 2-7.

As discussed above, and as conceded by the Action, the through plating 3 of Figs. 2-7 acts as a disruption element to the subsequently applied layers. What this means is that the subsequently applied layers applied to the through plating do not wet the through plating due to the material it is made of, and due to this action, are deposited on the surrounding layer(s) (and not on plating 3) such as layer 2 and/or forming filets as in Fig. 3 as discussed. This occurs due to the properties of the carbon black (or any of the materials mentioned in the specification in para. [0015]) not permitting wetting of its surface by the later applied functional layers and not due to the fact that a physical through plating is present. The non-wetting action is a function of the

material and not its shape.

The problem addressed by the claims is to form vias or holes in subsequently applied layers without damaging those layers so that damaging drilling, etching and other mechanical operations are not needed.

See applicant's specification para. [0007] which discusses this problem of drilling, etching and otherwise mechanically producing holes in previously applied organic layers causing damage to these layers.

> "Hitherto vias have always been formed by a procedure whereby holes are subsequently produced in existing layers by drilling, etching away or usual methods . . ."

Para. [0004] of the specification states:

> "Hitherto through platings have been produced on the finished thin layers, in which case the risk of the thin layers being damaged weighs very heavily because the functionality of the entire component is brought into question as soon as one of the functional layers is damaged."

Consequently, claim 12 has full support in the specification and is directed to the problem discussed and solves that problem.

Claims 12 and Claim 13, Friend, Sakai and Gudesen

The Action states that Friend discloses forming a void by forming a first lower layer including forming a disruption element of solvent material (Pages 33-34) on the first lower layer which element is arranged to result in a void in at least a first portion of subsequently deposited layers on the first lower layer. Applicants disagree. Friend does not teach this methodology.

Friend page 29 describes Fig. 12(a). Friend states: (line 5 of the first full paragraph)

> "In this example it is desired to form a via hole through the insulating PVP layer. Methanol is selected as the solvent because of its ability to readily dissolve PVP."
>
> At line 8 from the page 29 bottom, Friend states
>
> "Note that when the via-hole reaches the bottom non-polar semiconducting layer **the etching stops**." (emphasis supplied)

Etching does not perform the same action of the disruption element as claimed in claims 12 and 13. The claims require the disruption element **to result in a void in response to at least one layer** of the second portion of the layers **being applied to the disruption element**. No such void occurs as a result of applying the subsequent layers to a disruption element in Friend, because Friend is missing such an element (the solvent applied later is not such an element as asserted). An etchant applied after the layers are deposited and forms a hole in such previously applied layers later is not a disruption element that results in a void in subsequently applied layers as they are being applied in the manner claimed. The layers are applied first in Friend who then, later in the process, etches the void into the prior applied layers. Friend is irrelevant to claim 13.

At page 30, Friend states "Figure 12 (b) illustrates the effect of the dropping of several droplets of methanol in sequence onto the via hole location." The Action refers to Friend as teaching the claimed disruption element of solvent material. This Friend disclosure is irrelevant to applicants' claim 12 (and claim 13 calling for structure corresponding to the claimed step of claim 12) calling for:

> the forming of the first lower layer including forming a disruption element on the first lower layer, which element is arranged to result in a void in at least two layers of a first portion of the subsequently deposited layers on the first lower layer

The methanol solvent of Friend is not a disruption element as claimed. It is an etchant applied to the previously applied layers (not subsequently applied layers as claimed) for etching (dissolving the prior deposited layers of material it is applied to) and forming a via (a passageway) in the prior applied layer(s). The layer(s) to which the methanol is applied are not subsequently applied layers, but previously applied layers. They must be applied first in order to etch the vias therethrough via the solvent. The solvent is not a disruption element on a lower layer to form voids in a subsequently applied layer. It is a solution that is applied afterwards to prior applied layers. It is error to ignore express claim limitations. Claims 12 and 13 are believed allowable over this references for this reason alone.

Claims 12 and 13 are further rejected in view of Sakai as disclosing a disruption element. Amended claim 12 calls for carbon black not disclosed by Sakai. Amended claim 13 calls for a truncated conical in cross section profile through plating that is solely truncated. Neither Friend, Sakai (and Schmidt cited as disclosing a truncated through plating) are relevant to this aspect of claim 13 missing in these references. Claim 12 is believed allowable over the cited references, which is missing the claimed carbon black disruption element and the solely truncated conical in cross section profile as claimed. For example, Sakai is cited as disclosing a material that is not wetted by applied organic materials. However, this reference discloses chromium as the repelling substance and not carbon black, as in claim 12. There is no disclosure much less suggestion of carbon black in Sakai. See applicants' response filed Oct. 22, 2009 enclosing a translation of Sakai. Chromium and carbon black are distinctly different unrelated materials, Sakai being silent as to carbon black.

No reference suggests its combination with the other outside of applicants' disclosure and, in any case, such combination does not disclose what is missing in all of the cited references, the carbon black of claim 12 and the through plating of claim 13 as discussed below. Gudesen is cited for its disclosure of multiple layers and does not add what is missing in Friend, Sakai and Schmidt. The remaining references cited of record including Ezawa and Kelly are believed equally foreign to amended claims 12 and 13. These claims are believed allowable over these references.

In addition, claim 13 is amended to recite that the disruption element comprises a truncated conical in cross section profile through plating that is solely truncated. The truncated conical in cross section profile of claim 13 corresponds to similar subject matter in canceled claim 2, whose subject matter is added to claim 13. Schmidt is cited as disclosing the truncated conical in cross section profile of canceled claim 2. Schmidt does not disclose a truncated conical in cross section through plating as claimed in the various claims directed to this structure as previously discussed in detail in applicants' prior responses showing it is not relevant contrary to that position asserted by the Action.

Schmidt discloses a structure that is only partially at best truncated conical in cross section profile, but is also partially cylindrical. Being partially cylindrical defeats Schmidt as disclosing the truncated conical in cross section profile as claimed as previously discussed. This point is not deemed persuasive by the present Action. This Action ignores the true disclosure of Schmidt, ignoring part of its structure, dissecting it into unrelated sections, so that one dissected section meets what is claimed. Such dissection is in error. However, to advance the prosecution of this application, claim 13

is amended to state that through plating is solely truncated. This plainly is not true in Schmidt due to the fact that his structure includes a cylinder attached to the so called truncated conical in cross section structure and is not solely truncated. For the reasons given, claim 13 is believed allowable over Friend, Sakai, Gudesen and Schmidt..

Claims 17 and 20

These claims are rejected as obvious over Ezawa, Gudesen and Schmidt. These claims include subject matter similar to that in claim 13 and thus are not suggested by these references taken singly or in combination, which are missing the solely truncated conical in cross section through plating as discussed above in connection with claim 13. Ezawa does not disclose or suggest such a through plating. The above discussion is in regard to Schmidt cited for the disclosure of the truncated conical in cross section profile, but which is missing the solely truncated shape as claimed. These claims are believed allowable over these references.

Claim 27

This is a method claim which includes subject matter discussed above in respect of others of the claims in regard to a solely truncated conical in cross sectional profile through plating. Claim 27 includes the step of "forming a free-standing solely truncated conical cross-sectional profile through plating overlying and contiguous with the lower layer." None of the references cited of record disclose or suggest this structure for reasons discussed above. These references are foreign to this claim which is believed allowable.

New Claim 28

This claim calls for forming a carbon black solely truncated conical cross section

in profile through plating disruption element on the first lower layer. This step includes subject matter comprising a carbon black disruption element and a solely truncated conical cross section in profile through plating disruption element discussed above in respect of others of the claims. This subject matter is missing in all of the cited references. This claim is believed allowable.

New Claim 29

This claim is similar to claim 12 wherein carbon black is the disruption element. This claim has full support in the specification as discussed above in connection with claim 12 and is believed allowable for similar reasons.

New Claim 30

This claim depends from claim 27 and is believed allowable at least for the same reason given for claim 27. In addition, claim 30 calls for the through plating of claim 27 to comprise a carbon black disruption element which is believed further allowable for reasons given in respect of others of the claims calling for similar subject matter.

The remaining claims depend from the independent claims, include all of the structure therein and are believed allowable for at least the same reasons. All claims are believed allowable.

Since applicants have shown that claims 3-5, 8, 11-13, 15, 17-22 and 24-30 are in proper form for allowance, such action is respectfully requested.

A $220 fee is believed due for the added independent claim, but not otherwise for the total number of claims as the fee for the total number of claims was previously paid for. A fee was previously paid for 41 total claims and four independent claims. There are now five independent claims and a total number of claims fewer than the 41 claims

previously paid for.

The Commissioner is authorized to charge deposit account 03 0678 the $1030 fee for the RCE and the added independent claim or any under payments or credit this account for any overpayments in connection with this paper.

Respectfully submitted,
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